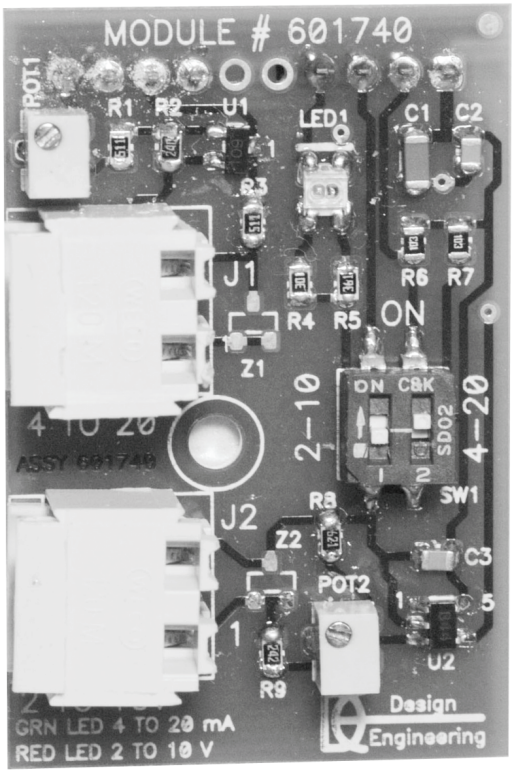
INSTALLATION & OPERATING INSTRUCTIONS

Y-305 4-20 mA / 2-10 VDC Input Control Module



Used with Y-200 Series Electronic Boiler Sequencer & Outdoor Reset Control System

This manual should be maintained in legible condition and kept adjacent to the heater or in another safe place for future reference.

Raypak®

A Rheem® Company

Catalog No. 5000.64B Effective: 09-19-08 Replaces: 03-25-08 P/N 241224 Rev. 3

Introduction

The Raypak Y-200 Series Controller, equipped with the Y-305 4-20 mA / 2-10 VDC Module, provides the ultimate in temperature setpoint control for Raypak boiler applications. The Y-305 4-20 mA / 2-10 VDC Module provides a conversion, from either a milliamp or a voltage input from an outside control source, to a setpoint temperature reading on the Y-200 series controller LCD panel.

The Module is provided in a kit which includes the necessary hardware to install the board onto the Y-200 control board. This manual should be used in conjunction with the Y-200 Series Installation & Operating Manual (Catalog No. 5000.62, P/N 241125).

Important Safety Instructions

IMPORTANT NOTICE: These instructions are intended for use by qualified personnel who are specifically trained and experienced in the installation of this type of equipment and related system components. Some states may require that installation and service personnel be licensed. Only qualified persons shall attempt to repair this equipment. Repair must be done according to the instructions provided.

WARNING: Improper installation, adjustment, alteration, service or maintenance may damage the equipment, create a hazard resulting in asphyxiation, explosion, fire, electric shock, personal injury or property damage, and void the warranty.

CAUTION: This appliance has provisions to be connected to more than one (1) supply source. To reduce the risk of electric shock, disconnect all connections before servicing.

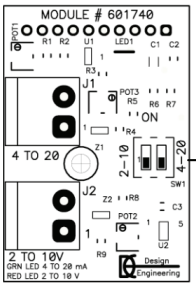
CAUTION: Risk of electric shock: More than one (1) disconnect switch may be required to de-energize the equipment before servicing.

NOTE: Minimum 18 AWG, 105°C, stranded wire must be used for all low voltage (less than 30 volts) external connections to the unit. Solid conductors should not be used because they can cause excessive tension on contact points. Install conduit as appropriate. All high voltage wires must be the same size (105°C, stranded wire) as the ones on the unit or larger.

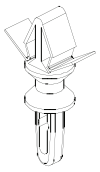
Installation

1. Verify that the control signal is within the 4-20 mA / 2-10 VDC parameter.
2. Turn off the power to the Y-200.
3. Open the front cover of the Y-200 to access the display/keypad door.
4. Open the display/keypad door to access the Y-200 Control Board (P/N 601670).
5. Secure the nylon standoff (P/N 550767) onto the Y-200 Control Board as shown in Fig. 1.
6. Plug the Y-305 4-20 mA / 2-10 VDC Module into the Y-200 Control Board at the J20 expansion port (10-pin plug), securing Module with nylon standoff.
7. Attach 4-20 mA / 2-10 VDC signal wires to 2-pin plug connector (P/N 650935).
8. Plug 2-pin connector into either the J1 or J2 connection of Module (J1 for 4-20 mA operation, J2 for 2-10 VDC operation).

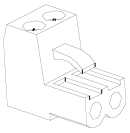
Rev. 3 reflects the following: **Changes to:** The text in paragraph one of the **Introduction** section on page 2; steps 5 and 6 of the **Installation** section on page 2; Fig. 1 on page 3; steps 1 and 2 of the **4-20 mA Mode** section on page 4; steps 1 and 2 of the **2-10 VDC Mode** section on page 4.



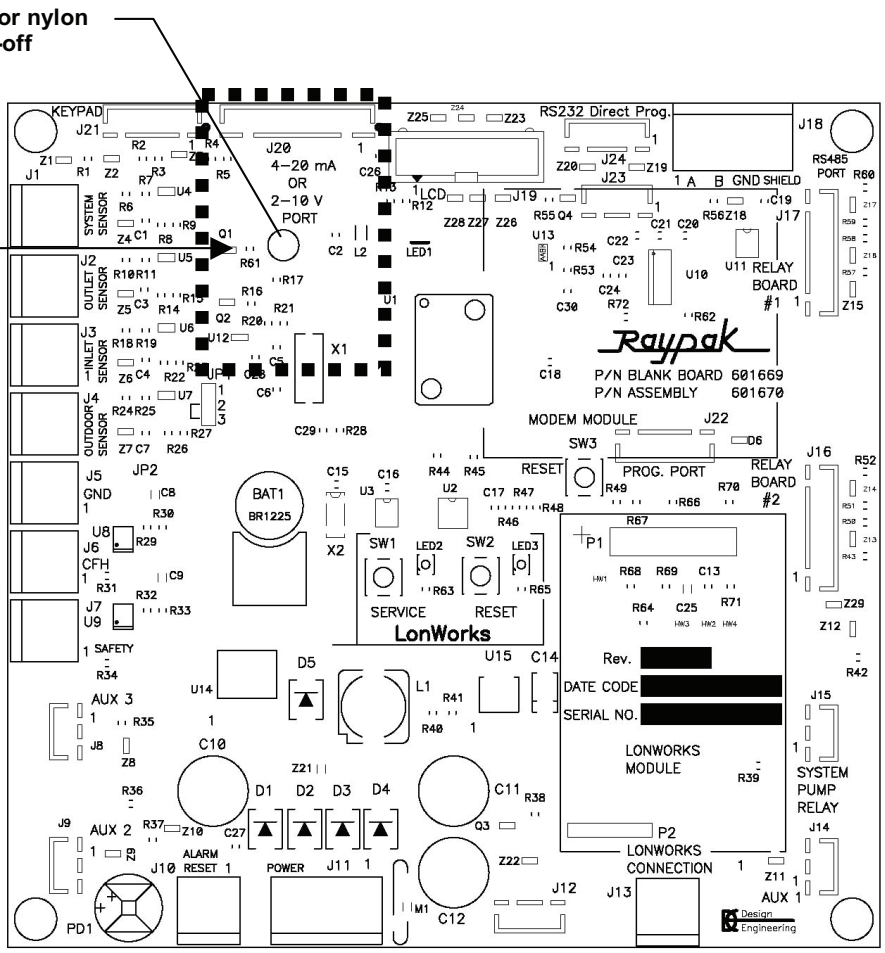
Y-305 4-20 mA /2-10 VDC Module (P/N 601740)



Nylon stand-off (P/N 550767)



2-pin plug connector (P/N 650935)



Y-200 Control Board (P/N 601670)

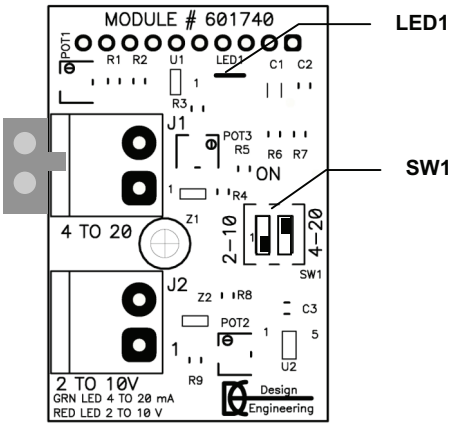
Fig. 1: Components

Start-up

NOTE: The Y-305 4-20 mA / 2-10 VDC Module can be set up for 4-20 mA mode or 2-10 VDC mode, not both.

4-20 mA Mode

1. Set the SW1-2 dip switch (4-20 mA) to the ON position, and the SW1-1 dip switch (2-10 VDC) to the OFF position.
2. Restore power to the Y-200.
3. Green LED1 indicates Module is in 4-20 mA mode.
4. Green LED1 flashing once per second indicates a weak (less than 4 mA) signal.
5. Green LED1 flashing two times per second indicates an overload (over 20 mA) signal.

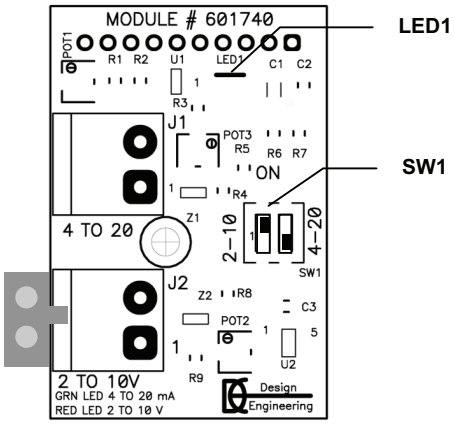


Module set to 4-20 mA mode

Fig. 2: Module Set to 4-20 mA Mode

2-10 VDC Mode

1. Set the SW1-1 dip switch (2-10 VDC) to the ON position, and the SW1-2 dip switch (4-20 mA) to the OFF position.
2. Restore power to the Y-200.
3. Red LED1 indicates Module is in 2-10 VDC mode.
4. Red LED1 flashing once per second indicates a weak (less than 2 VDC) signal.
5. Red LED1 flashing two times per second indicates an overload (over 10 VDC) signal.



Module set to 2-10 VDC mode

Fig. 3: Module Set to 2-10 VDC Mode

Pin	Interface Pin Functions
1	5 VDC
2	4-20 mA selector switch
3	2-10 VDC selector switch
4	4-20 mA LED drive
5	N/C
6	N/C
7	2-10 VDC output
8	4-20 mA output
9	2-10 VDC LED drive
10	GND

Table A: Interface Pin Functions

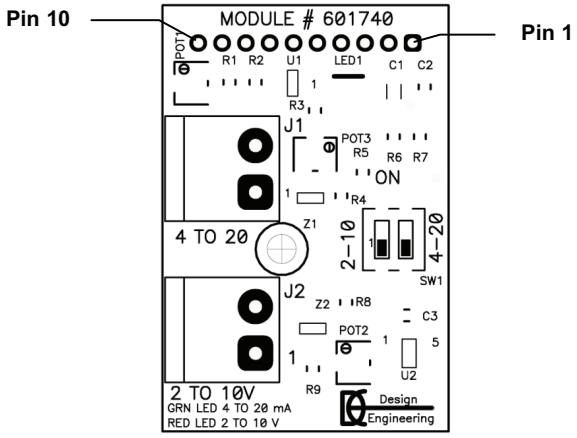


Fig. 4: Pin Locations

Module Adjustment

NOTE: The instructions below use a 140 °F setpoint temperature.

4-20 mA Module

1. Set the input device signal to 12 mA.
2. Remove 2-pin connector from J1 connector on Module.
3. Verify 12 mA input signal at 2-pin plug connector using a calibrated digital volt meter (DVM).
4. Plug 2-pin connector back into the J1 connector.
5. Set Y-200 display to screen #2. (Refer to Y-200 Installation & Operating Manual, Catalog No. 5000.62.)
6. If necessary, adjust POT1 to achieve a 140 °F set-point temperature on Y-200 display. (POT1: Clockwise adjustment increases temperature; counter-clockwise adjustment decreases temperature.)

2-10 VDC Module

1. Set the input device signal to 6 VDC.
2. Remove 2-pin connector from J2 connector on Module.
3. Verify 6 VDC input signal at 2-pin connector using a calibrated digital volt meter (DVM).
4. Plug 2-pin connector back into the J2 connector.
5. Set Y-200 display to screen #2. (Refer to Y-200 Installation & Operating Manual, Catalog No. 5000.62.)
6. If necessary, adjust POT2 to achieve a 140 °F set-point temperature on Y-200 display. (POT2: Counterclockwise adjustment increases temperature; clockwise adjustment decreases temperature.)

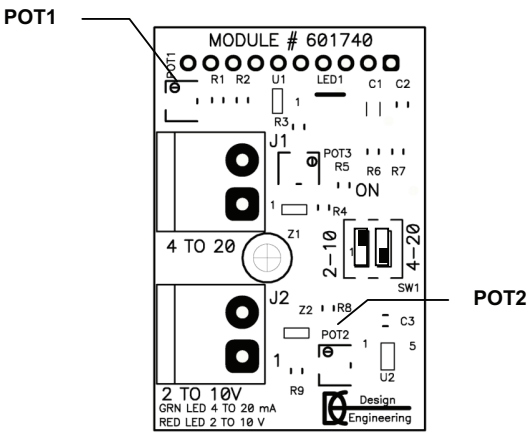


Fig. 5: Pot Locations

mA Input	Volt Input	Setpoint Temp. (°F)
4	2	60
5	2.5	70
6	3	80
7	3.5	90
8	4	100
9	4.5	110
10	5	120
11	5.5	130
12	6	140
13	6.5	150
14	7	160
15	7.5	170
16	8	180
17	8.5	190
18	9	200
19	9.5	210
20	10	220

Table B: Input vs. Setpoint Temperature

LIMITED WARRANTY

Y-305 4-20 mA / 2-10 VDC Module

for Y-200 Series Electronic Boiler Sequencer
& Outdoor Reset Control System

SCOPE OF WARRANTY

Raypak, Inc. ("Raypak") warrants to the original owner the Control System to be free from defects in materials and workmanship under normal use and service for the applicable warranty period. In accordance with the terms of this Limited Warranty, Raypak will furnish a replacement or repair, at our option, any defective part which fails in normal use and service during the applicable warranty period. The replacement or repair will be warranted for only the unexpired portion of the original Warranty Period.

APPLICABLE WARRANTY PERIOD

The effective date of warranty coverage is the date of original installation, of the Control System, by a qualified electrician or by a Raypak authorized service technician. The Applicable Warranty Period is one (1) year from the effective date.

WARRANTY EXCLUSIONS

This Limited Warranty does not apply:

1. if the control system is not properly installed by a qualified technician in accordance with manufacturer's installation instructions, applicable codes, ordinances and good trade practices,
2. to damage or malfunctions resulting from failure to properly install, operate or maintain the system in accordance with the manufacturer's instructions;
3. if the rating plate(s) or serial number(s) are altered, defaced or removed;
4. if the System is modified in any way or used with any non-factory authorized accessories or components;
5. to damage or failure from abuse, accident, act of nature, fire, flood, freezing or the like;
6. to accessories, rubber or plastic parts, light bulbs or glass parts;
7. if the System is moved from its original installation site; or if the original owner no longer owns the site or the System.

LABOR AND SHIPPING COSTS

This Limited Warranty does not cover labor costs for service, removal or reinstallation of any part nor shipping charges to or from a Raypak designated repair center or to or from the installation site. All such costs are your responsibility.

HOW TO MAKE A WARRANTY CLAIM

To make a warranty claim, promptly ship (postage prepaid) or carry the defective part to a designated Raypak Service Dealer or Service Station in the United States, supplying proof of purchase and date of installation and the model and serial numbers. If you cannot locate a dealer, contact the Raypak Service Department at the address/telephone listed below. Raypak reserves the right at all times to inspect the claimed defect and verify warranty coverage at its factory.

EXCLUSIVE WARRANTY - LIMITATION OF LIABILITY

This is the only warranty given by Raypak. No one is authorized to make any other warranties on behalf of Raypak. ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE WARRANTY PERIOD SPECIFIED ABOVE. RAYPAK'S SOLE LIABILITY WITH RESPECT TO ANY DEFECT SHALL BE AS SET FORTH IN THIS LIMITED WARRANTY. ANY CLAIMS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGE FROM WATER LEAKAGE) ARE EXCLUDED. Some states do not allow limitations on how long an implied warranty lasts, or for the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

We suggest you immediately complete the information below and retain this Limited Warranty Certificate in case warranty service is needed.

Raypak, Inc., Service Department
2151 Eastman Avenue, Oxnard, California 93030
Telephone: (805) 278-5300 Fax (805) 278-5468

The following information must be provided when you write or call:

Original Owner	Model Number
Mailing Address	Serial Number
	Date of Installation
City State Zip Code	Installation Site
Daytime Telephone Number	Contractor/Installer

Registered Quality Management System

www.raypak.com

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